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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/522,707	03/10/2000	Kazumasa Hiramatsu	2185-0408P-SP	5987

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Andrew D meikle
Birch Stewart Kolasch & Birch LLP
P.O. Box 747
Falls Church, VA 22040-0747

EXAMINER
BAUMEISTER, BRADLEY W

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 02/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action

Application No.	Applicant(s)
09/522,707	Hiramatsu et al.
Examiner	**Art Unit**
B. William Baumeister	2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED *Jan 24, 2003* FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid the abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

THE PERIOD FOR REPLY [check only a) or b)]

a) ☒ The period for reply expires *3* months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☒ A Notice of Appeal was filed on *Jan 24, 2003*. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2. ☐ The proposed amendment(s) will not be entered because:

(a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);

(b) ☐ they raise the issue of new matter (see NOTE below);

(c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

(d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____

3. ☐ Applicant's reply has overcome the following rejection(s):

4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. ☒ The a) ☐ affidavit, b) ☐ exhibit, or c) ☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because:
see attachment

6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. ☒ For purposes of Appeal, the proposed amendment(s) a) ☐ will not be entered or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____

Claim(s) objected to: _____

Claim(s) rejected: *1-9*

Claim(s) withdrawn from consideration: *10*

8. ☐ The proposed drawing correction filed on _____ is a) ☐ approved or b) ☐ disapproved by the Examiner.

9. ☐ Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ .

10. ☐ Other:

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 1/24/2003 have been fully considered but they are not persuasive.

a. Applicant has argued that Mauk does not anticipate nor render obvious the claimed invention. Specifically, Applicant points out that Mauk does not disclose or suggest using a vapor phase epitaxy (VPE) method, but rather is directed towards a liquid phase epitaxy (LPE) method (REMARKS, page 6). The Examiner agrees with this point.

b. Applicant asserts that VPE and LPE are fundamentally different methods (REMARKS, page 6). The Examiner agrees with this, too. Thus, the previous restriction of method claim 10 is still deemed proper for the reasons set forth in the restriction section of the Office Action. The Examiner agrees with Applicant that method claim 10 as presently written would be subject to rejoinder and allowance if product claim 1 as presently written is subsequently determined to be allowable, according to the Office's implementation of *In re Ochiai.*

c. Applicant has argued that the difference in a VPE method and a LPE method imparts physical differences between the invention of Mauk and the instant invention (REMARKS, page 6).

i. Initially, the Examiner notes that Applicant has **not** argued that the LPE method of Mauk will not produce a GaN-based structure that satisfies the structural limitations relating to the X-ray rocking curves or to the presence of voids on the upper surface of the mask

as set forth in the independent claims. Rather Applicant argues that LPE and VPE produce different types and positions of threading dislocations (REMARKS, pages 7-). The shortcomings of this argument are twofold:

ii. First, the Examiner notes that while Applicant's attorney has asserted that a structural difference will result, no direct factual evidence has been provided. It is well settled that the arguments of counsel cannot take the place of factual evidence in the record. (See MPEP 716.01(c).

iii. Second, the only factual evidence provided is Applicant's comparison between the types of dislocations arising from VPE-epitaxial lateral overgrowth (ELOG) of GaN on GaN, on the one hand, with the types of dislocations arising from LPE-ELOG of GaAs on Si, on the other hand. These two structures possess significant differences. First, GaAs and Si are both cubic structures whereas GaN has a wurtzite crystallography. Moreover, GaAs and Si have significantly different lattice-constants that have historically rendered attempts at heteroepitaxial growth between these materials difficult, whereas the ELOG of GaN on GaN entails the heteroepitaxial growth of the same material as that underlying it (excluding the ELOG mask). Thus, as the arguments are directed solely towards the structural differences that exist between two materially different material-systems that are produced by two different methods, the arguments do not provide any evidence of whether any structural differences will exist when a GaN ELOG structure is formed by the two different methods. Restated, the proffered evidence does not show whether the asserted structural differences of the respective dislocations is

attributable to the growth method or to the material systems. As such, Applicant has not met his burden of showing that the product-by-process language results in a structural distinction. Accordingly the rejections are maintained.

2. For the sake of compact prosecution, the Examiner notes that many inventions and disclosures that are directed towards ELOG GaN do not set forth the associated rocking curve data in the manner set forth in claim 1. Comparison and/or contrast of the present invention to these other inventions and disclosures would be greatly facilitated if Applicant were to file an affidavit that provides the dislocation density which ELOG GaN layers formed by the present method inherently produce. While Applicant is under no obligation to do so, it would improve the quality of the prior-art search and better ensure the validity of any patent that may subsequently issue.

INFORMATION ON HOW TO CONTACT THE USPTO

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner, **B. William Baumeister,** at **(703) 306-9165.** The examiner can normally be reached Monday through Friday, 8:30 a.m. to 5:00 p.m. If the Examiner is not available, the Examiner's supervisor, Mr. Eddie Lee, can be reached at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

B. William Baumeister
Patent Examiner, Art Unit 2815
February 6, 2003